

## VITAE

### John Crothers Fountain

#### Education:

B.S., Chemistry, California Polytechnic State  
University at San Luis Obispo, CA - 1970

M.A., Geology, University of California at  
Santa Barbara, CA - 1972

Ph.D., Geology, University of California at  
Santa Barbara, CA - 1975

#### Professional Employment:

1/1/2002 Present Professor and Department Head, Marine Earth  
and Atmospheric Sciences, North Carolina State University

1999-2001 Chairman, Department of Geology  
State University of New York at Buffalo

1996 - 2001 Professor, Department of Geology  
State University of New York at Buffalo

1982 - 1996 Associate Professor, Department of Geology  
State University of New York at Buffalo

1975 - 1982 Assistant Professor Department of Geological  
Sciences, State University of New York at Buffalo

#### Professional Society Memberships:

Geological Society of America

American Geophysical Union

National Ground Water Association/Association of Ground Water Scientists and Engineers

Sigma Xi

#### Awards:

Jack Edward Mckee Medal, For Contributions to Water Resource Development or  
Protection, Water Environment Federation, 1998

#### Research Areas: Contaminant Hydrogeology and Fractured Rocks

Current Research: Groundwater remediation of DNAPL source zones, The use of soil gas for detecting deep structure and fracture flow paths. Characterization of fractured rock reservoirs. Nitrogen cycling in air, groundwater and surface waters. Nutrient contamination in groundwater.

### **National Research Council Committees:**

- Chair: Committee on Source Zone Removal of Contaminants in the Subsurface  
2002-2005
- Committee on Remediation Science and Technology at the Hanford Site  
2000-2001
- Committee on Technologies for Cleanup of Subsurface Contaminants in the DOE Weapons  
Complex 1997-1999
- Committee on the Department of Energy Office of Science and Technology's Peer Review  
Program 1997-1998
- Subcommittee on Contaminant Plumes in the Environment 1995-1996

### **Publications:**

- 48) [Showers, William J.](#), [Genna, Bernard](#); [Mcdade, Timothy](#); [Bolich, Rick](#); [Fountain, John C.](#), 2008, Nitrate contamination in groundwater on an urbanized dairy farm. *Environmental Science and Technology*, v 42, n 13, Jul 1, 2008, p 4683-4688
- 47) Bergslien, E.T. and J. C. Fountain (2008) Examining the utility of epoxy replicas of single, natural fractures in dolostone for visualization experiments. *Hydrogeology Journal*, [Volume 16, Number 1 / February, 2008](#), p. 43-53
- 46) Elisa Bergslien and John Fountain (2006) The effect of changes in surface wettability on two-phase saturated flow in horizontal replicas of single natural fractures. *Journal of Contaminant Hydrology*, Volume 88, Issues 3-4, Pages 153-180.
- 45) Israel, Daniel W.; Showers, William J.; Fountain, Matthew; Fountain, John, 2005, Nitrate movement in shallow ground water from swine-lagoon-effluent spray fields managed under current application regulations. *Journal of Environmental Quality*, v 34, n 5, September/October, 2005, p 1828-1842
- 44) NRC, 2005 , *Contaminants in the Subsurface: Source Zone Assessment and Remediation* Committee on Source Removal of Contaminants in the Subsurface, National Research Council 384 pages, 6 x 9, 2004 (J.C. Fountain, Chair) <http://books.nap.edu/catalog/11146.html>
- 43) Bergslien, E.T., Fountain, J.C. and Giese, Jr. R. (2004) Characterization of the surface properties of epoxy-type models used for multiphase flow studies in fractured media and creation of a new model, *Water Resources Research*. Vol. 40 (5), W05112
- (42) Fountain, John, 2004. DNAPL Site Characterization for Waste Management at Manufactured Gas Plant (MGP) Sites. EPRI Technical Report. In Press. EPRI, Palo Alto, California.
- (41) Fountain, John, 2003. Barriers for Waste Management at Manufactured Gas Plant (MGP) Sites. EPRI Technical Report. EPRI, Palo Alto, California. 56 p.
- (40) Jacobi-Robert-D, Fountain-John, 2002, The character and reactivation history of the

southern extension of the seismically active Clarendon-Linden fault system, western New York State. *Tectonophysics* 353; 1-4, Pages 215-262. 2002. .

- (39) Yager D. and Fountain J., (2001), Effect of Natural Gas Exsolution on Specific Storage in a Confined Aquifer undergoing Water-Level Decline. *Ground Water* 39:517-525.
- (38) Fountain, J.C., R.D. Jacobi, (2000). "Detection of buried faults and fracture systems using soil gas", *J. Environmental and Engineering Geosciences*. 6(3):201-201
- (37) Fountain, J. C., Jacobi, R.D. and Fountain, M.J., (2000) Detection Of Fracture Intensification Domains Using Hyperspectral Remote Sensing Data: A Case Study in Allegany County, New York. In *Proceedings of the 1999 Independent Oil and Gas Association Conference*, Hamilton, Ontario. 38-43.
- (36) Lee, M., and J.C. Fountain, (1999). "The Effectiveness of Surfactants for Remediation of Organic Pollutants in the Unsaturated Zone", *Journal of Soil Contamination* v.8, 39-62.
- (35) NRC (1999) *Groundwater and Soil Cleanup: Improving Management of Persistent Contaminants: Committee on Technologies for Cleanup of Subsurface Contaminants in the DOE Weapons Complex*, National Academy Press, 241 p.
- (34) NRC (1998) *Peer Review in Environmental Technology Development Programs: National Research Council Committee Report*, 1998, 182 p. National Research Council, 1999,
- (33) Fountain, J.C, 1998, *Technologies for Dense Nonaqueous Phase Liquid Source Zone Remediation*, Ground Water Remediation Technology Analysis Center, Technology Evaluation Report, 70p.
- (32) Renshaw, C.E., G.D. Zynda, and J.C. Fountain, (1997). "Permeability reductions induced by sorption of surfactant", *Water Resources Research*, 33(3), 371-378.
- (31) Fountain, J.C., A. Lagowski, T. Hauptfleisch, N. Case, M. Khan, (1997). "A Procedure for Surfactant Selection Based on Field Scale Tests of Surfactant Enhanced Aquifer Remediation", In: *Hazardous and Industrial Wastes, Proceedings of the Twenty-Eighth Mid-Atlantic Industrial and Hazardous Waste Conference*, A. Scott Weber, ed., Technomic Publishing Co.Inc., 203-210.
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- (29) Fountain, J.C., (1997). "The Removal of Nonaqueous Phase Liquids Using Surfactants", In: *Subsurface Restoration*, H. Ward, Ed., Ann Arbor Press, Ch.12, 193-204.
- (28) Fountain, J.C., R.S. Starr, T. Middleton, M. Beikirch, C. Taylor, and D.S. Hodge, (1996). "A Controlled Field Test of Surfactant Enhanced Aquifer Remediation", *Ground Water*, 34(5): 910-916.
- (27) Fountain, John C., Lagowski, A., Hauptfleisch, T, Case N. and Khan, M, 1996, *A Procedure for Surfactant Selection based on Field Scale Tests of Surfactant Enhanced Aquifer*

Remediation, p. 203-211. Proceedings of the 28th annual Mid Atlantic Industrial and Hazardous Waste Conf. Technomic Pub., Lancaster PA.

- (26) Lee, M.D., G.E. Gregory, D.G. White, J.C. Fountain, and S.H. Shoemaker, (1995). "Surfactant-Enhanced Anaerobic Bioremediation of a Carbon Tetrachloride DNAPL. In Bioremediation of Chlorinated Solvents", In: Bioremediation of Chlorinated Solvents, Proceedings of the In-Situ and on-site Bioremediation Conference, R.E. Hinchey, A. Leeson, L. Semprini, eds., Battelle Press, 147-151.
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- (14) Fie, S., J. Fountain, E.D. Hunt, E. Zubrow, R. Jacobi, K. Bartolotta, J. Brennan, K. Allen, and P. Bush, (1990). "The Analysis of Encrustations in Iroquis Ceramic Vessels: Implications for the Delineation of Food Resources. vOrganic Contents of Ancient Vessels", *Materials Analysis and Archaeological Investigation. MASCA Research Papers, Vol. 7*, University of Pennsylvania.
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- (10) Fountain, John C., D.S. Hodge, and R.P. Shaw, (1989). "Melt segregation in anatectic granites, a thermo-mechanical model", *J. Volcanol. Geotherm. Res*, 39: 279-296.
- (9) Zubrow, E., J.C. Fountain, A. Pelcin, P. Bush, K. Allen, and K. Bartolatta, (1989). "The archaeometric determination of prehistoric ceramic exchange in Sorsogon, Phillipines" In: *Ceramic Ecology Revisited 1987: The technology and socioeconomics of pottery. BAR Series 436(ii): 33-56*.
- (8) Bartollata, K.A., P.J. Bush, J.C. Fountain, D. Wellspek, E. Zubrow, K. Allen, and A. Pelcin, (1988). "Slag as evidence for early iron production in arctic Norway" *Acta Borealis* (1/2):22-33.
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- (5) Lorenz, Brenna E., and J.C. Fountain, (1982). "The South Lake Igneous Complex, Newfoundland: a marginal basin-island arc association", *Can. J. Earth Sci.*, 19: 490-503
- (4) Fountain, John C., and D.S. Hodge, (1981). "Incorporation of U and Th into a monzonite pluton, Laramie Range, Wyoming", *Econ. Geol.*, 2253-2256.
- (3) Fountain, John C., T.M. Usselman, J. Wooden, and C.C. Langway, (1981). "Evidence of the bedrock beneath the Greenland Ice Sheet near Camp Century 1", *J. Glaciology*, 27: 193-197.
- (2) Fountain, John C., D.S. Hodge, and F.A. Hills, (1980). "Geochemistry and petrogenesis of

the Laramie Anorthosite Complex, Wyoming", *Lithos*, 14: 113-132.

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## **II. Technical Reports:**

- (6) Jacobi, R and J. Fountain, March (1995). *Seismic Potential of the Clarendon-Linden Fault System in Allegany County, Submitted to New York State Research and Development Authority*, 1708 p.
- (5) Jackson, R.E. and J.C. Fountain, (1995). "The In-Situ Decontamination of Sand and Gravel Aquifers by Chemically Enhanced Solubilization of Multiple-Component DNAPLS with Surfactant Solutions: Phase I Final Report", DOE Contract #DEACZ1-92MC29111. Submitted to U. S. Dept. of Energy, 52 p.
- (4) Fountain, J.C., January (1995). "Bench Tests for a Treatability Study of Surfactant-Enhanced Aquifer Remediation at Hill AFB, Utah", Technical Report to: U. S. Air Force and Montgomery-Watson Inc., 122 p.
- (3) Fountain, J.C., June (1994). "Laboratory Experiments to Identify and Characterize Surfactants and Their Solubilization Ability" Technical Report to U. S. Dept. of Energy and Intera Inc., 19 p.
- (2) Fountain, J.C., (1993). "Extraction of Organic Pollutants Using Enhanced Surfactant Flushing II: Pilot Scale Field Trial at Corpus Christi, Texas", New York State Center for Hazardous Waste Management, Tech. Rpt. 10 p.
- (1) Fountain, J.C. and D.S. Hodge, (1992). "Extraction of Organic Pollutants Using Enhanced Surfactant Flushing- Initial Field Test", New York State Center for Hazardous Waste Mgt. Tech. Rpt. 10 p.

## **III. Abstracts:**

- (50) Lugert-Courtney-M; Jacobi-Robert-D; Wehn-Karen-S; Fountain-John , 2001, Tracing deep structure; fracture analysis in the Finger Lake region of the Appalachian Plateau, NYS. Geological Society of America, 2001 annual meeting. Abstracts with Programs - Geological Society of America. 33; 6, Pages 394. 2001. .
- (49) Nelson-Travis; Fountain-John; Budny-Lucas; Jacobi-Robert, 2001 Tracing deep structure; soil gas analyses in the Finger Lakes region of the Appalachian Plateau, NYS Geological Society of America. Abstracts with Programs. 33; 6, Pages 236.
- (48) Jacobi R., Baudo, A., Lowenstein, S and Fountain, J., 1999, Faults Exposed in Zoar Valley Western New York, and their possible relation to geophysical anomalies, landsat lineaments and seismicity. *Geol. Soc. Amer. Abst.* 31(2):25
- (47) Bergslien, E. and Fountain, J., (1999) Effect of aperture distribution and wettability on NAPL flow in fractures. *Geological Society of America Abstracts* 31 (7 ): 216.
- (46) Jacobi R. and Fountain J., 1998, Characteristics of basement-controlled faults of the

Clarendon-Linden Fault System: Evidence from seismic reflection profiles for local multiple Phanerozoic Reactions during far-field orogenies. Geological Society of America, Abst. 30(1) 27.

- (45) Paquette L., Fountain J. and Jacobi R., 1998, Characterization of Fractures in the Bath and Savona, New York Areas. Soil Gas Surveys and Structural Data. Geological Society of America Abstracts 30(1) 65.
- (44) Jacobi, R. and Fountain J., 1998, Multiple Reactivations of the Clarendon Linden Fault System of Western New York, Geol. Soc. Amer. Abst., 30(7)324.
- (43) Fountain, J. and Jacobi,R., 1998, The Relationship Between Fracture Characteristics and Soil Gas Anomalies, Geol. Soc. Amer. Abst. 30 (7), 324,
- (42) Bergslien, E., Fountain, J., Jacobi, R., Renshaw, C., (1997) Experimental investigation of two-phase flow in rough-walled fractures Anonymous, Geological Society of America, Abstracts with Programs 29 (6): 187
- (41) Jacobi, R., and Fountain, J. (1997) Discrimination of tectonic and nontectonic faults; a case study involving 11 integrated AGU 1997 spring meeting, Eos, Transactions, America Geophysical Union, 78:316.
- (40) Lee, Minhee, J.C. Fountain, (1997). "The Use of Surfactants for Remediation of Organic Pollutants in the Unsaturated Zone", In: Abstracts with Programs of The Geological Society of America, 32nd Annual Meeting, Northeastern Section, King of Prussia, Pennsylvania, 29(1):60.
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- (38) Case, Nichole, J.C. Fountain, R.E. Jackson, C. Young, J. Minquan, (1997). "Results and Interpretations of a Surfactant-Flood at DOE, Portsmouth, Ohio", In: Abstracts with Programs of The Geological Society of America, 32nd Annual Meeting, Northeastern Section, King of Prussia, Pennsylvania, 29(1):36.
- (37) Hauptfleisch, Tamara M., J.C. Fountain, A. Lagowski, (1997). "Feasibility Study and Surfactant Selection at the PPG Site, Lake Charles, Louisiana", In: Abstracts with Programs of The Geological Society of America, 32nd Annual Meeting, Northeastern Section, King of Prussia, Pennsylvania, 29(1):51.
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- (32) Hauptfleisch, T. M., J. Fountain, M. Khan, and D. Frazier, (1996). "DNAPL Removal Using Surfactant Stabilized Spontaneous Emulsions." In: Abstracts with Programs of The Geological Society of America's 31st Annual Northeastern Section, Buffalo, New York, 28(3):62.
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- (30) Jacobi, R. D., J. Fountain, J. Burley, S. Korff, L. Kracker, and C. Zent, (1996). "Utilization of a GIS (ARC/INFO) for Compilation of Cultural and Geological Data in Land Use Considerations: Allegany County, New York State." In: Abstracts with Programs of The Geological Society of America's 31st Annual Northeastern Section, Buffalo, New York, 28(3):67.
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- (23) Longergan, J.T., K.R. Davis, P.E. Mariner, A. Backus, G.W. Butler, J.W. Douthitt, J.C. Fountain, R.E. Jackson, and J.F. Pickens, (1994). Field testing of Surfactants for Remedial Purposes. (Abst.) Opportunities '95, U.S.D.O.E., November 1994.
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- (19) Jackson, R.E., J.F. Pickens, J.C. Fountain, and S.H. Conrad, (1993). Characterization and Remediation of DNAPL Zones in Sand and Gravel Aquifers by Chemically Enhanced Solubilization. (Abst.) Environmental Remediation Conf., Augusta, GA., Oct. 1993.
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- (14) Hodge, D, Zhang, X., Fountain, J., Shaw, R. (1991), A model of granitic melt segregation in partial melt zones Fawcett, J. Jeffrey (chairperson), Joint annual meeting of the Geological Association of Canada and the Mineralogical Association of Canada with the Society of Economic Geologists; Program with Abstracts 16: 56.
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  - (9) Jacobi, R.D. and J.C. Fountain, (1988). Structural and geochemical transect across the Rowe-Hawley Zone, central Mass.: Geol. Society of America, Abstract with Programs, NE section, 20(1):29.
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  - (1) Fountain, John C. (1976). The geochemical evolution of Brokeoff Volcano, Lassen Volcanic National Park: Geol. Soc. Amer. Abst., 8:53.

### **Research Grants:**

Collaborative Research: Enhancing Diversity in Geosciences in North Carolina. John Fountain project director. C. Thomas and F. Semazzi PIs. National Science Foundation, 5/1/2003-4/30/2005 \$510,626

NCSU/NC A&T Program for STEM Enrollment Enhancement. John Fountain, Project Director. C. Thomas, R. Borden and others, co-PIs. National Science Foundation. 1/1/2003-12/31/2005 \$350,016 (NC A&T portion funded separately).

Trenton/Black River Sweet Spots in Western New York. Co-PI with Robert Jacobi (UB) and Stewart Lowenstein (Quest Energy), New York State Energy Research and Development Authority, 6/1/01-6/1/02, \$122,000.

Innovative Methodology for Detection of Fracture-Controlled Sweet Spots in the Northern Appalachian Basin. Co-Principal Investigator with Robert Jacobi, U.S. Department of Energy, 6/1/00-5/31/04, \$827,505.

Detection of Hydraulically Conductive Fractures in Unconsolidated Sediments. Co-PI with Greg Baker. UB Pilot Program, 8/1/00-7/32/01, \$20,000

Direct Detection of DNAPL using AVO Ground Penetrating Radar. Greg Baker PI. UB Environment and Society Institute Research Seed Grant. \$16,000. 8/1/00-7/31/01.

Seismograph to Detect Seismic Activity in the Buffalo Region. Co-Principal Investigator with Robert Jacobi, City of Buffalo FEMA project, 10/23/00- 10/23/01, \$84,993.

Demonstration of an Exploration Technique Integrating EarthSat Lineaments, Soil Gas Anomalies and Fracture Intensification Domains for the Determination of Subsurface Structure in the Bass Island Trend, New York. Co-PI with Robert Jacobi. New York State Energy Research and Development Authority, 5/98-6/00 \$112,000

In-situ Decontamination of Sand and Gravel Aquifers by Chemically- Enhanced Solubilization of Multiple Component DNAPLS with Surfactant Solutions, with Intera Corp. of Austin Texas, \$75,000.

Determination of the Relative Performance of Selected Akzo Surfactants for Surfactant-Enhanced Remediation, Akzo-Nobel, 3/31/95-2/28/96, \$17,100.

Soil Gas Surveys as a Method of Prediction of Potential Subsidence Areas, Akzo-Nobel Inc., 7/4/94 - 10/31/95, \$52,927.

Evaluation of Surfactant-Enhanced Aquifer Remediation: Prediction of Levels of Residual Contamination, DuPont/New York State Center for Hazardous Waste Management, 9/1/94 - 8/31/95, with co-investigator, A. Rabideau (CIE), \$70,589.

A Feasibility Study of Surfactant Flushing at Hill Air Force Base, US Air Force, 1/1/94 - 12/31/94, \$65,000.

Soil Gas Surveys of the Retsof Mine Area, Phase II, 5/94-6/95 Akzo-Nobel, \$38,835.

Use of Surfactants for Extraction of Organic Pollutants in the Unsaturated Zone, New York State Center for Hazardous Waste Management, 9/1/93 - 8/31/95, \$52,696.

The Use of Surfactants for Ground Water Remediation at the PPG Lake Charles Plant, PPG, 8/15/92 - 12/31/96, \$263,937.

A Demonstration of In-Situ Remediation, DuPont Corp. , 1/1/89 - 12/31/94, \$294,427.

Pilot Fracture Characterization Study in the Cuylerville Area: Soil Gas & Remote Sensing Analysis, Co-Principal Investigator with R. Jacobi, Akzo-Nobel, 4/25/94 - 7/31/95, \$8,500.  
Demonstration of an Exploration Technique Integrating High Resolutions Hyperspectral Remote Sensing Data, Soil Gas Surveys and Fracture Intensification Domains for Determination of Subsurface Structure in New York State. New York State Energy Research and Development Authority, Fountain Co-PI, R. Jacobi, Project Director, 6/1/98-5/31/00, \$106,396

Demonstration of an Exploration Technique Integrating Earthsat's Landsat Lineaments Soil Gas Anomalies and Fracture Intensification Domains for Determination of the Subsurface Structure in the Bass Island Trend, New York State. New York State Energy Research Development Authority, R. Jacobi P.D., Fountain, Co-PI. 5/1/98- 5/1/00, \$112,184

In-situ Decontamination of Sand and Gravel Aquifers by Chemically- Enhanced Solubilizations of Multiple Component DNAPLS with Surfactant Solutions, US DOE, 3/8/93 - 8/15/94, \$198,000.

Mitigation of Biofouling at Ground Water Extraction Wells, Kodak/New York State Center for Hazardous Waste Management, 8/1/92 - 2/28/94, with co-investigator, S. Taylor, \$32,000.

A Reconnaissance Study of the Use of Surfactants for Remediation of T1 Crude, Kodak, 9/1/91 - 12/31/92, \$62,000.

Determination of the Seismic Potential of the Clarendon-Linden Fault System in Allegany County, Co-Principal Investigator with R. Jacobi, NYSERDA, 8/1/91 - 3/31/95, \$842,000.

An Investigation of the Ability of Surfactants to Solubilize PCB's and Extract Them From Soil, General Electric Corp., 5/1/91 - 12/31/93, \$45,000.